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Technology Features, Empowering Perceptions, and Voicing Behavior on Microblog

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ABSTRACT

Recently, we have observed rapid growth of individual daily technologies such as microblogs, and the technology's influence on people's social life. To investigate such self-determined technology usage, we choose an empowerment perspective as our theoretical lens, because the empowerment concept highlights human beings' proactive nature. We investigate a specific microblog usage, i.e. publicly voicing personal views on social affairs, which is an initial yet fundamental step in citizen participation.

The study reveals that microblog features have transformed the way social news disseminate, and hence influence information quality and users' social network building. These changes further influence users' empowerment perceptions through raising users' perceptions of internal political self-efficacy, autonomy, meaning, and impact. The more empowered users are, the more likely users will voice on microblog. We integrate context into our theorizing, and the empowerment framework allow us to uncover the psychological mechanism through which microblog technology features enable voicing, a specific technology usage.

Keywords

Empowerment, microblog, self-determined usage, voicing behavior

INTRODUCTION

In recent decades, Internet based technologies and applications such as social networks, blogs, microblogs, etc. are becoming part of people's everyday life experience. Twitter (https://twitter.com), an online microblog service which was created in March 2006, has attracted over 300 million global users as of June 2011 (Taylor, 2011). In 2011, Twitter processed over 300 million tweets and over 1.6 billion search queries per day (Twitter Engineering, 2011). Microblog platforms in other regions have also experienced rapid growth. In the first half of 2011, the number of microblog users in China grew from 63 million to 195 million, which is a 208% growth (China Internet Network Information Center, 2011). Weibo (http://weibo.com), a Chinese microblog service which was created in 2009, has gained great popularity, and pushed the corporation's online brand advertising revenues to a new high in 2011, exceeding $100 million per quarter (SINA Corporation, 2011).

Recognizing the tremendous growth of these applications, more and more scholars are calling for research to investigate such applications' influence on people's personal and social life (Vodanovich et al., 2010;

Yoo, 2010). The call is timely and necessary; although technologies such as microblogs are very different from the organizational information systems which are the traditional focus in information systems research.

Most of the organizational information systems are designed to serve specific purposes, and employees are required to use them to fulfill specific task requirements. For example, the procurement staff uses supply chain management systems to control inventory levels and coordinate with suppliers. Hence, most technology adoption studies rely on the theory of planned behavior and evaluate how technology enhances work productivity and efficiency (Davis, 1993; Delone and McLean, 2003; Venkatesh et al., 2003)

In contrast, many individual level technologies and applications are general purpose tools, and individuals enjoy freedom regarding 1) whether to use the technology or not, and 2) how to use the technology. We need a new perspective to understand the usage of such technologies.

Hence, we propose an empowerment framework to examine individuals' voluntary usage of such general purpose technology as microblogs. To consider the self-determined usage, we choose the empowerment perspective, because it is theoretically rooted in social psychologists' belief in human beings' proactive nature (Ryan and Deci, 2000b; Decl and Ryan, 2000).

As a general purpose broadcasting and communication system, a microblog can actually be used for various purposes. In this study, we examine a specific usage behavior, i.e. voicing social issues. We have noted that the general public can exert pressure on the handling of social issues through publicly voicing personal views on a microblog, e.g. the microblog users' voice influenced the Chinese government's handling of the train crash (Kenneth Rapoza, 2011).

In the following, we first introduce the empowerment framework, and integrate empowerment into the context of voicing behavior using the microblog platform. We then analyze how the microblog features influence users' empowerment perceptions and further influence users' publicly sharing personal opinions on social affairs. We then test our theoretical arguments using survey and discuss the results.

EMPOWERMENT

Sociologists, community researchers, and education researchers have all contributed to the development of the concept of "empowerment" in their respective research context. Kieffer studied empowerment in the context of emerging citizen leaders in grassroots organizations. He concluded that "empowerment among political activists contained elements of perceived efficacy, self-esteem, and a sense of causal importance" (Kieffer, 1984). Zimmerman's empowerment definition is in the context of individuals' engagement in community development, "psychological empowerment could be described as the connection between a sense of personal competence, a desire for, and a willingness to take action in the public domain" (Zimmerman and Rappaport, 1988). Organization behavior researchers have also studied empowerment. Thomas et al. proposed a framework for the empowerment process, indicated that empowered individuals have high intrinsic motivation to perform tasks (Thomas and Velthouse, 1990). They proposed the four dimensions of psychological empowerment, i.e. impact, competence/self-efficacy, meaningfulness, choice/autonomy. Their framework has been empirically tested in the work context at both individual and team levels, and empowerment is found to facilitate work efficiency and creativity (Spreitzer, 1995a; Seibert et al., 2004). We leverage the empowerment perspective to explain microblog usage for voicing behavior. We first define the four dimensions of empowerment in our context.

Self-Efficacy

Self-efficacy refers to one's belief about one's ability and competence. The concept has been investigated by many social psychologists, and received more attention after Bandura theoretically synthesized it into

the social cognitive theory (Bandura, 1982). Besides the general self-efficacy, researchers are interested in specific self-efficacy, to match with their specific research context. For example, in the IS field, we have the concept of computer self-efficacy which refers to individuals' beliefs about their abilities to competently use computers (Compeau and Higgins, 1995). In this study, we are interested in self-efficacy related to citizen participation in public affairs. We looked into political science, and identified the concept of internal political efficacy, which is defined as "one's beliefs about one's own competence to understand, and to participate effectively in politics" (Niemi et al., 1991).

Autonomy

Autonomy, or self-determination, is defined as an individuals' belief in having choice in initiating and regulating actions (Deci et al., 1989; Deci, 1992). When one is autonomous/self-determined, one is acting as the origin of one's own behavior, instead of being pawns of coercive pressure (deCharms, 1968). In the context of microblog usage, autonomy is reflected in how much freedom and independence one has when using the microblog, especially when one posts and participates in discussions.

Meaning

Creating meaning involves absorbing values and initiatives into one's self (Ryan and Deci, 2000b). In the work context, employees judge the meaning of a task according to their own ideals or standards (Thomas and Velthouse, 1990). When the job requirements or work roles are consistent with one's beliefs and values, one tends to consider the work meaningful (Brief and Nord, 1990). In the context of microblog usage, meaning indicates the fit between certain microblog usage behaviors and the values users hold. The better the fit between the two, the more meaningful one perceives the specific usage to be.

Impact

Impact is another important dimension in the empowerment concept. Impact is the degree to which the individual believes he or she can influence the outcomes of social issues. In the work context, when one produces work that is significant to one's team, one experiences impact (Seibert et al., 2004). In our context, when one has influence on the handling of public affairs through one's voicing on the microblog, one experiences impact.

MICROBLOG'S INFLUENCE ON INFORMATION QUALITY

Traditionally, individuals are at the end of the information flow. When individuals read USA today, watch CNN news on the television, or browse nytimes.com, they are absorbing information created and filtered by media agencies. The information flows in a hierarchical manner: media agencies are at the upper level, serving as information creator and gatekeeper; and individuals are at the end of the flow, as information consumer (Weimann, 2011; Bennett and Manheim, 2006).

The technology features of the microblog fundamentally transform the way information disseminates. A microblog enables every individual to be an information creator. One can post whatever one views as interesting and newsworthy. Simply writing a sentence or taking a photo makes reporting straightforward. For example, the raid on Osama Bin Laden was first reported by a man called Sohaib Athar @ReallyVitural on Twitter, when he posted "Helicopter hovering above Abbotabad at 1AM (is a rare event)", he was not even aware of what was actually happening (Cellan-Jones, 2011). In the China high-speed train collision, Weibo user @Yangjuanquanyang cried for help when the train she was on crashed into another bullet train outside the city of Wenzhou. The message spread before the official news agencies reported the train collision.

Not every individual has the opportunity to be an eyewitness of a significant event and be the information creator. Yet every one can act as a gatekeeper and decide whether to further share the information with one's followers. In this way individuals are no longer passive receivers, but become active participants in the information dissemination process.

The transformation of the information dissemination process influences information quality. Information quality is a concept developed by IS scholars as they tried to evaluate the information provided by management information systems in an organization context (Lee et al., 2002). It contains multiple dimensions, including timeliness, credibility, understandability, etc. Though the context of this study is different from the original organization context, the criteria for evaluating information quality still holds. Specifically, timeliness, credibility, understandability, and completeness/scope of coverage are as important for social news as they are for managerial information.

Previously we have explained how microblog technology features transform the way social news is created and disseminated. We now address the transformation's impact on information quality.

Timeliness

Through a microblog, any eyewitness can report an event. Posting a short sentence or posting a photo allows the user to report the event on site. Hence, social news on microblogs is timelier than news from traditional media agencies.

Credibility

Because anyone can share any information, the credibility of the information on microblogs has been challenged. Yet such freedom also makes credibility verification possible, since an individual can get information from different sources, and do cross checking. Through searching keywords, and comparing the posting time, an individual can identify the various sources of the information. For example, during the British riots, thought various rumors emerged on Twitter, clarifications soon spread and rumors then faded (Barnett, 2011).

Understandability

Microblogs enforce a word limit on each post, for example, 140 characters for Twitter, 140 Chinese characters for Sina Weibo. So users need to write concisely. In addition, microblogs allow users to post images, audio and video files. This also improves the understandability of the post and reduces the cognitive effort needed for processing the information.

Completeness/scope of coverage

Media agencies apply their criteria when determining what events shall be reported. In regions where the government has significant control over media, such criteria can be very stringent. As a result, only certain events get reported. When individuals determine what to report, they have different criteria. An event which may be considered unworthy of reporting by individual A may be reported by individual B. Accordingly, the events reported will be more diversified.

MICROBLOG'S INFLUENCE ON NETWORK BUILDNG – IDENTIFYING SIMILAR OTHERS

Microblog technology features have a fundamental impact on the expansion of social networks, especially on helping one identify and get connected with those who hold similar views as oneself.

In building any social network, an essential step is to get to know others through interaction. In real life, physical encounter such as studying in the same school is necessary for people to get to know each other. On a microblog, things are different. First, since the posts on a microblog are public, the interactions are not limited to real life acquaintances. Second, and more importantly, interactions on a microblog evolve as users discuss a certain topic. Such discussion is like an open forum, anyone can join through commenting on the post, or forwarding the post with personal comment attached to the original post. A user can also indicate another user he/she wants to discuss with, using "@" plus the id of the other user.

The information chain created through multiple forwarding helps users identify similar users. When user B forwards a post from user A, @A is appended to the new post, indicating the source of the message. If another user C forwards the post from user B, @B will be added to the new message. When one reads user E's post which includes symbols @D@C@B@A, one will know the post is from A to B, to C, to D, and to E. Because the microblog allows users to keep the information chain, it is possible for users to identify who holds similar views. Such processes also happen in real life, but it takes more time and effort. Microblogs help users identify similar people in a more efficient and convenient manner.

HYPOTHESIS DEVELOPMENT

Information Quality, Network Building, and Empowerment Perceptions

Access to quality information helps users understand what is happening in society, and hence improves one's internal political efficacy. Research has found that information and knowledge help students raise their self-efficacy perceptions (Bandura 1982, Bandura 1989), and access to a company's strategic information makes employees feel more competent in their work (Spreitzer, 1995b). As the individual gains access to more social issue related information, one is likely to hold more competent beliefs about one's internal political efficacy.

H1 One's access to quality information is positively related to one's internal political efficacy.

As previously explained, autonomy is a concept related to choice (Thomas and Velthouse, 1990). When one gains complete and timely information, the information will essentially expand one's choice set, and hence broaden one's autonomous spectrum.

H2 One's access to quality information is positively related to one's perceived autonomy.

Figuring out the meaning of a certain behavior is a process of absorbing values and evaluating the behavior according to the values (Ryan and Deci, 2000b). This is basically a continuous learning process, and users' values keep on being updated. As microblog users get connected with people who hold similar values and express similar opinions as them, their prior values will be reinforced, and they will perceive their behaviors as more meaningful. Such reinforcement effects has also been identified in the use of electronic communication platforms in an organization, and among potential innovators who are being influenced by one another (West and Farr, 1990; Yates et al., 1999).

H3 One's improvement in network building, specifically, identification of people with similar views, is positively related to one's perceived meaning.

A single voice may not be heard, but voices from a crowd will be heard. When people aggregate, they are able to create pressure on governmental authorities, and influence them on public related decision making (Rich et al., 1995). As the individual gets connected with people who hold similar views, one is likely to have a higher perception on one's impact on social affairs.

H4 One's improvement in network building, specifically, identification of people of similar views, is positively related to one's perceived impact.

Empowerment Perceptions and Voicing Behavior

Self-efficacy is viewed as one of the fundamental drivers of behavior (Bandura, 1989; Ryan and Deci, 2000a). Users who have higher computer self-efficacy are less likely to experience anxiety and use computers more (Compeau et al., 1999). The more competence one possesses in understanding and dealing with social affairs, the more willingly one is to express personal opinion.

H5 One's internal political self efficacy is positively related to one's voicing behavior.

When one experiences more autonomy, one is more likely to become intrinsically motivated to act (Decl and Ryan, 2000; Ryan and Deci, 2000b). Proactive behaviors are mostly observed in situations where individuals experience freedom and independence. Employees who have been offered more freedom in the way they complete their work are found to be more effective and creative (Kirkman and Rosen, 1999; Spreitzer, 1995a). We hypothesize that the more autonomy one enjoys on the microblog platform, the more likely the user is to exhibit voice.

H6 One's perceived autonomy is positively related to one's voicing behavior.

As people experience meaning, they are more likely to achieve internal consistency and coherence (Ryan and Deci, 2000b).This suggests they will better internalize the behavior into their personal identity. Ma and Agarwal found out that people contribute knowledge in online communities as they want to make others view them as who they are, such as friendly, helpful (Ma and Agarwal, 2007). We hypothesize that the more meaning one experiences, the more likely one is to share personal views.

H7 One's perceived meaning is positively related to one's voicing behavior.

A sense of causal importance motivates individuals to act (Kieffer, 1984). If one's efforts could not have any impact, one is likely to feel helpless and depressed, and withdraw from the action (Ryan and Deci, 2000a). Regarding voicing behavior, the more one expects one's voice may change the situation, the more likely one is to publicly express personal opinions.

H8 One's perceived impact is positively related to one's voicing behavior.

In sum, Figure 1 illustrates the conceptual framework, and Figure 2 presents the research model.

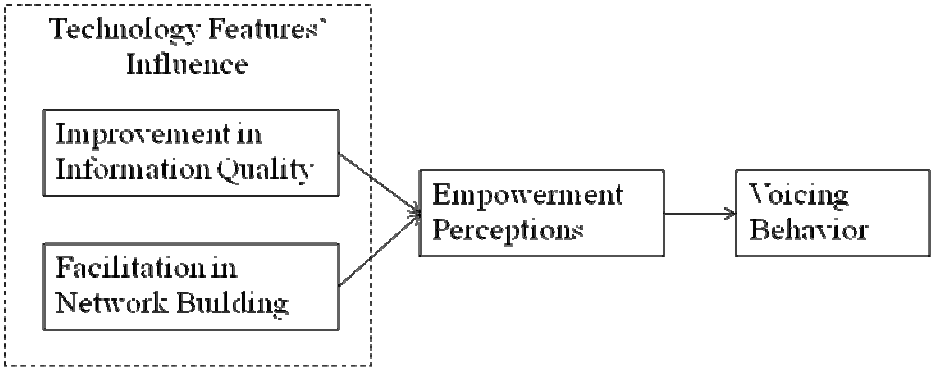

Figure 1. Conceptual Framework: Technology Features' Influence, Empowerment Perceptions, and Voicing Behavior

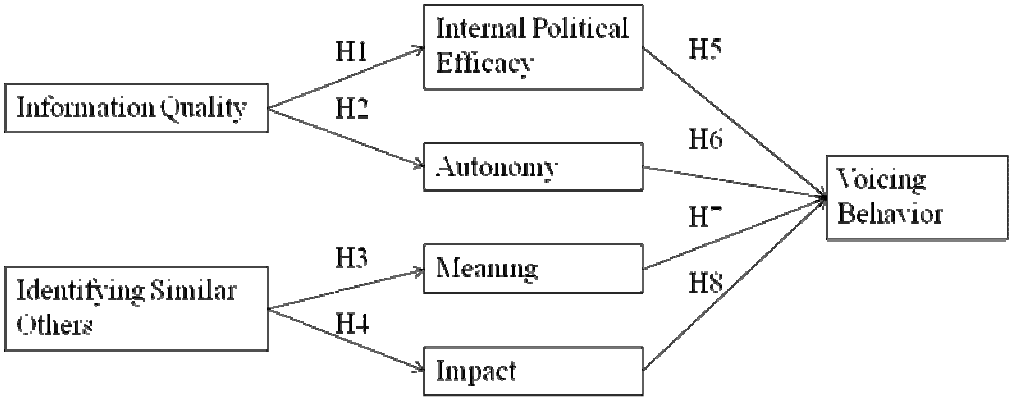

Figure 2. Research Model

METHODOLOGY

We adopted a survey methodology to empirically test the proposed hypotheses. We invited users from a China microblog platform, Weibo (http://weibo.com), to participate in the survey. In total, 187 users joined the survey, resulting in 152 complete responses. A partial least squares (PLS) model was created using SmartPLS v2.0M3 (Ringle et al., 2005) to examine the measurement properties and test the hypotheses.

Scales

Internal political efficacy was measured with scales from Niemi et al. (Niemi et al., 1991). We adapted scales for autonomy, meaning, and impact from Spreitzer (Spreitzer, 1995b). Items for information quality are from Lee et al. (Lee et al., 2002). Items for using microblog features in identifying others who hold similar views, and items for voicing behavior are developed with reference to prior studies on usage of online community features (Ma and Agarwal, 2007). All the measures use a 1-7 likert scale, from 1 strongly disagree to 7 strongly agree.

Table 1 presents the mean and standard deviations of the constructs.

	Mean	SD
autonomy	5.59	1.01
efficacy	4.64	1.17
impact	3.68	1.31
infoq	5.56	0.84
meaning	5.48	0.92
similarity	5.58	0.96
voice	4.84	1.27

Table 1. Summary Statistics

Measurement Quality

The psychometric properties of the scales are further assessed through item loading, discriminant validity, and internal consistency. The Confirmatory Factor Analysis (CFA) results in Table 2 show that: all items have high loadings on its respective construct, all loaded above .80, fulfilling the >.70 guideline (Barclay et al., 1995). The measurement quality indicators in Table 3 help assess the reliability of the measurement items: the composite reliabilities are greater than .70, and the average variances extracted (AVE) all exceed

0.50 (Bagozzi and Yi, 1988; Fornell and Larcker, 1981). The measurements have high internal consistency, as composite reliability values all exceeded .90 and most AVE values are more than 0.70, except for the construct of information quality with AVE of 0.62, while it has composite reliability of 0.87 and is an acceptable measure. To ensure discriminant validity, we check that the respective loading should be higher than cross-loading (Table 4) and the square root of AVE should be larger than the inter-construct correlations, i.e. the average variance shared between the construct and its indicators should be larger than the variance shared between the construct and other constructs. These criteria are also fulfilled.

	Infoq	similarity	efficacy	autonomy	meaning	impact	voice
infoq1	0.86	0.52	0.42	0.42	0.42	0.04	0.42
infoq2	0.78	0.40	0.36	0.22	0.37	0.01	0.47
infoq3	0.77	0.38	0.33	0.25	0.28	0.07	0.34
infoq4	0.74	0.39	0.30	0.22	0.44	0.10	0.47
sim1	0.47	0.86	0.28	0.23	0.56	0.16	0.41
sim2	0.46	0.89	0.32	0.29	0.59	0.20	0.32
sim3	0.52	0.95	0.35	0.27	0.62	0.16	0.42
sim4	0.50	0.91	0.30	0.28	0.59	0.20	0.40
sim5	0.46	0.85	0.34	0.19	0.49	0.24	0.38
efficacy3	0.40	0.26	0.83	0.28	0.40	0.18	0.36
efficacy4	0.44	0.34	0.90	0.26	0.45	0.25	0.44
efficacy5	0.34	0.31	0.83	0.29	0.36	0.27	0.35
efficacy6	0.36	0.31	0.88	0.20	0.45	0.22	0.40
autonomy1	0.24	0.24	0.20	0.88	0.27	0.08	0.17
autonomy2	0.25	0.23	0.20	0.88	0.27	0.05	0.20
autonomy3	0.37	0.29	0.34	0.89	0.35	0.08	0.41
autonomy4	0.37	0.22	0.26	0.90	0.31	0.01	0.33
meaning1	0.46	0.56	0.43	0.39	0.89	0.16	0.52
meaning2	0.38	0.51	0.40	0.29	0.88	0.18	0.54
meaning3	0.42	0.58	0.46	0.23	0.86	0.19	0.56
meaning4	0.44	0.60	0.41	0.30	0.90	0.19	0.56
impact1	0.03	0.17	0.22	0.01	0.14	0.91	0.25
impact2	0.08	0.20	0.23	0.07	0.19	0.92	0.27
impact3	0.07	0.19	0.26	0.04	0.21	0.94	0.28
impact4	0.07	0.22	0.28	0.09	0.21	0.94	0.31
voice1	0.48	0.41	0.41	0.25	0.61	0.25	0.94
voice2	0.48	0.39	0.36	0.37	0.59	0.29	0.91
voice3	0.53	0.45	0.44	0.30	0.58	0.30	0.96
voice4	0.50	0.35	0.47	0.33	0.52	0.29	0.90

Table 2. CFA Results: Loadings and Cross Loadings

	AVE	Square Root of AVE	Composite Reliability	Cronbachs Alpha
autonomy	0.78	0.89	0.94	0.91
efficacy	0.74	0.86	0.92	0.88
impact	0.86	0.93	0.96	0.94

infoq	0.62	0.79	0.87	0.80
meaning	0.78	0.88	0.93	0.90
similarity	0.80	0.89	0.95	0.94
voice	0.86	0.93	0.96	0.95

Table 3. Measurement Quality Indicators

	autonomy	efficacy	impact	infoq	meaning	similarity	voice
autonomy	1.00						
efficacy	0.30	1.00					
impact	0.06	0.27	1.00				
infoq	0.36	0.45	0.07	1.00			
meaning	0.34	0.48	0.20	0.48	1.00		
similarity	0.28	0.36	0.21	0.54	0.64	1.00	
voice	0.34	0.45	0.30	0.54	0.62	0.43	1.00

Table 4. Inter-Construct Correlations

To examine whether common method bias is a significant issue, we first performed a Harman one-factor test (Podsakoff et al., 2003). No single factor emerged nor did a single factor account for a majority of the variance. As the Harman one-factor test is not sufficiently sensitivity to detect small levels of common method effects, we also performed marker-variable analysis (Malhotra et al., 2006; Lindell and Whitney, 2001; Podsakoff et al., 2003), and used the second-smallest correlation .07 as a proxy for common method variance r_m, which is not statistically significant. We calculated the adjusted correlations and corresponding significance values. The impact of common method variance on the magnitude and significance of the correlations is not significant and thus common method bias is not a significant concern in this study.

Hypothesis Testing

We tested the hypotheses by analyzing the PLS structural model. In a PLS structural model, the loading of measures of each construct are interpreted as the loading in a principal components factor analysis. Path estimates are interpreted as standardized beta weights in a regression analysis. To estimate the significance of path estimates, we adopted a bootstrapping procedure, using the original sample size of 152 and repeated with 500 samples. As the results in Table 4 demonstrate, most of the hypotheses are supported. Information of better quality improves one's autonomy and internal political self-efficacy perceptions (H1, H2); identifying and connecting with similar users helps one experience meaning and impact (H3, H4). Among the four aspects of empowerment, meaning is significantly related to voicing behavior (H7); internal political self-efficacy, autonomy, and impact do not have significant influence on voicing behavior (H5, H6, H8). In total, the total explained variance of voicing behavior is 44.81%. We will talk more about the results in the discussion section.

		Path Coefficient	t-statistics	Results
H1	infoq -> efficacy	0.45	5.74	Supported
H2	infoq -> autonomy	0.37	5.05	Supported
H3	similarity -> meaning	0.64	12.74	Supported
H4	similarity -> impact	0.21	2.56	Supported
H5	efficacy -> voice	0.14	1.85	Not Supported
H6	autonomy -> voice	0.13	1.89	Not Supported
H7	meaning -> voice	0.47	6.96	Supported
H8	impact -> voice	0.16	1.88	Not Supported

Table 4. Hypotheses Testing

DISCUSSION

In this study, we leverage the empowerment framework to explain the interactions between microblog technology features, individual's psychological perceptions and usage behavior. The unique theoretical perspective we adopt creates new insights in understanding individual usage of technology in daily life (Yoo, 2010). We highlight the self-determined, proactive nature of such usage, and use the empowerment framework to explain an individual's usage of microblog features for voicing on public affairs.

We integrate context into theorizing, and explicitly define the four aspects of empowerment regarding microblog usage. The theoretical arguments have been tested using survey data. The findings show that the major factor explaining voicing on a microblog is meaning, which suggests that users' internal values are the key driver of their specific usage of the general purpose microblog platform. The effects of internal political self-efficacy, autonomy, and impact on voicing behavior are not significant at the .05 level, although significant at the 0.1 level. Because autonomy on microblogs is already perceived to be quite high (mean 5.59), it may no longer be a concern when people consider whether to speak out or not. As for internal political self-efficacy and impact, their effects on voicing behavior might be related with specific types of voicing behaviors we are interested in. Giving constructive suggestions may require more self-efficacy comparing to simply criticizing. Users who give constructive suggestions may care more about the impact, while users who criticizing may simply intend to express their emotions. To address the alternative explanations, we will divide voicing behaviors into different types in future studies and examine the relationships respectively.

The summary statistics show that microblog features indeed provide users with access to social news of better quality, and facilitate them in identifying people of similar views. The findings may help practitioners examine the influence of the technology and understand how people leverage a general purpose platform for specific purposes. Practitioners may improve technology features accordingly.

As we discuss the results of this study, it is necessary to clarify the limits of the current research. Though the empowerment framework can be generalized to explain individual voluntary usage of technology other than microblogs, it shall be noted that the antecedents of empowerment perceptions may change accordingly. Terms such as technology and Internet based technology actually involve various technologies which significantly differ in their features and functions (Wattal et al., 2010). Hence, we suggest researchers develop their models with the context in mind. As we conducted our research in a region currently undergoing the transition to democracy, it will be interesting to examine how the usage of microblogs in more democratic regions may vary.

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